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**A BRIEFING ON THE ANALYSIS OF CC130
PILOT ATTRITION RATES (U)**

By

P. FOURNIER

OCTOBER 1997

OTTAWA, CANADA

 National Defence Défense nationale

OPERATIONAL RESEARCH DIVISION

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DEPARTMENT OF NATIONAL DEFENCE

CANADA

OPERATIONAL RESEARCH DIVISION

DIRECTORATE OF OPERATIONAL RESEARCH (CORPORATE, AIR, MARITIME)

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Recommended by: 

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OTTAWA, ONTARIO

OCTOBER 1997

A Briefing on the Analysis of CC130 Pilot Attrition Rates

Abstract

This briefing was presented at the 1997 Operational Research Division Meeting on 30 September 1997. It describes the analysis of Personnel databases to quantify attrition levels among the CC130 pilot population and understand their reasons for leaving the CF. The population studied is the CC130 pilots who left the CF since 1 January 1992. The results presented in this briefing were used by the Defence Management Committee in analyzing issues in support of a Pilot Retention Program proposed by Air Transport Group.

Résumé

Cet exposé a été présenté à la conférence annuelle de la Division de Recherche Opérationnelle le 30 septembre 1997. On y décrit les résultats de l'analyse des bases de données du personnel faites afin de quantifier le nombre de libérations des FC chez les pilotes de CC130. On explique aussi les raisons qui motivent ces pilotes à quitter leur carrière militaire. La population étudiée est celle de tous les pilotes ayant quitté les FC depuis le 1^{er} janvier 1992. Les résultats présentés dans cette Note de Recherche ont été utilisées par le Comité de Gestion de la Défense dans l'évaluation du programme de rétention des pilotes proposé par le Groupe de Transport Aérien.

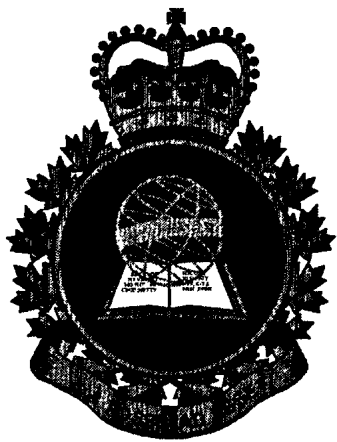
Keywords: CC130, Personnel Management, Pilot Attrition, Pilot Career, Transport Pilot.

A BRIEFING ON THE ANALYSIS OF CC130 PILOT ATTRITION RATES

Slide 1

Since the summer of 1996, there have been growing concerns among ATG Staff about CC130 pilots leaving the CF for a career with the Airlines. The Op Rsch Branch in ATGHQ was tasked to quantify the attrition level ([1], [2]), and at the same time investigate the reasons pilots give for leaving the CF.

This study is a good example of the type of work done in a Field Station. Although it was done in about two weeks, its results were of great importance to ATGHQ Staff. The findings of this analysis were annexed to an ATGHQ Staff paper proposing a Pilot Retention Program. This program is currently under study by the Defence Management Committee.

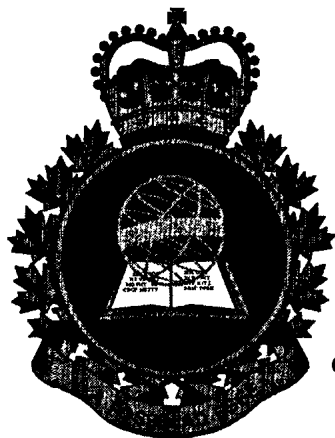


Analysis of CC130 Pilot Attrition Rates

**by
Pierre Fournier
DASOR 2**

Slide 2

The purpose of this study is defined first. Then, attrition measurements are presented for the period of 01 January 1992 to 06 July 1997. The number of Years of Service and the Experience Level (measured in flying hours on the CC130) were also examined, revealing an interesting relationship between these two quantities. A certain number of pilots have responded to the Canadian Forces Attrition Information Questionnaire (CFAIQ) when they left the CF. Their most important reasons for leaving were extracted from the CFAIQ database, and are discussed briefly. Finally, the conclusions of this study are summarized.



OUTLINE

- **Problem definition**
- **Attrition Measurements**
- **YOS and Experience level at Release**
- **Reasons for leaving the CF**
- **Conclusions**

Slide 3

Since 1996, there have been persistent rumours of higher than normal attrition among CC130 pilots. The upturn in the economy has brought commercial airlines back to profitability, and they have resumed hiring pilots. Military pilots are prime candidates for these airlines because of the quality of their training and their experience level on heavy and/or complex aircraft.

First, the attrition levels were measured in order to gauge the seriousness of the problem. Then, the reasons that pilots give for leaving their military career were examined since that could provide guidance for the pilot retention program proposed by ATG.

This project was given a high priority since many experienced CC130 pilots have indicated their intention to leave as soon as they are offered a position with a Civilian Carrier.



Problem Definition

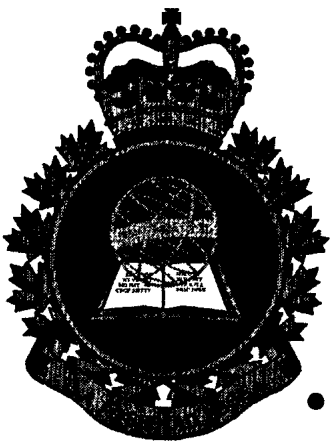
- **Perception:**
 - **high attrition rates among pilots**
- **Need to:**
 - **Confirm attrition**
 - **Measure attrition rates**
 - **Find out who leave and why**
- **Short duration, high priority**

Slide 4

The data source for this analysis is the Military Personnel Information System (MPIS). MPIS data was extracted by personnel from the Directorate of Personnel Information Services (DPIS).

The population of interest for this study is all CC130 pilots who left the CF since 01 January 1992. The criteria to select these pilots were as follows. First, they had to have flown the CC130 since 1987. Pilots who did not fly the CC130 before that were not a factor in the current attrition problem since they have been away from the CC130 for too many years. Second, in order to qualify as a CC130 pilot, they had to have at least 40 hours on type, which represents the number of hours flown during the OTU.

A total of 104 pilots matched those criteria.



Sample Population

- **Data Source: MPIS database**
- **Posting History and flying hours on CC130**
- **104 CC130 Pilots**
 - **Flew CC130 since 1987**
 - **Qualified on CC130 (≥ 40 hours on type)**
 - **Released since 01 Jan 92**

Slide 5

This slide shows the cumulative number of releases since 01 January 92. It includes pilots who left the CF during a ground tour, or during a flying tour on the CC130. Pilots posted from CC130 operations to a ground tour or to another aircraft type are not included. Attrition rates are based on linear regression of actual attrition data.

Three distinct phases are visible from this plot. From 01 January 1992 to 12 September 1994, attrition is low. Twenty one pilots took their release during that period. The calculated attrition rate is 7.32 pilots per year. This period corresponds to a period of stagnation in commercial aviation.

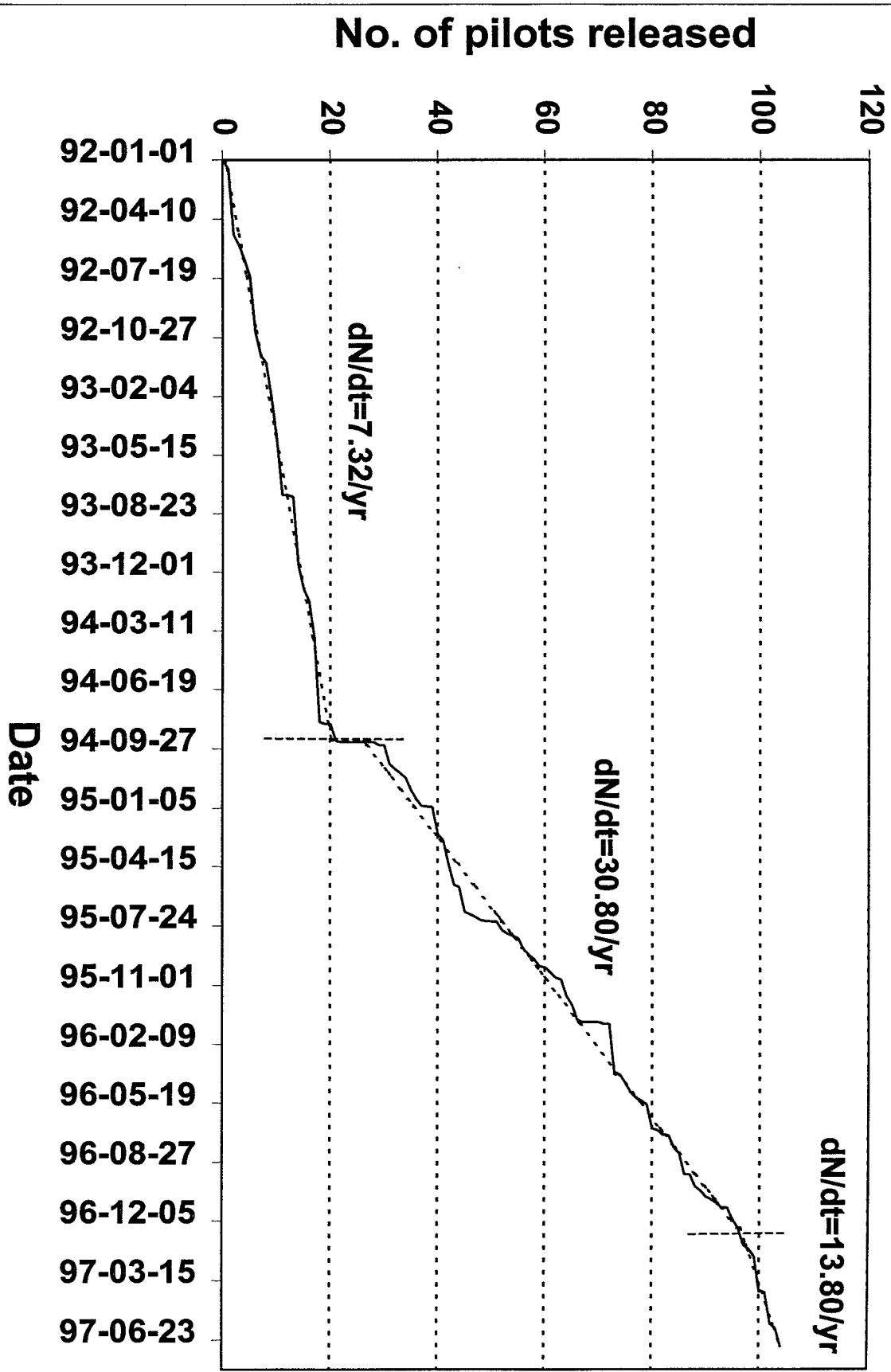
The second phase ranges from 12 September 1994 to 16 December 1996, during which there is a dramatic increase in the number of pilots leaving the CF (75 pilots). Calculations show that during this period, the attrition was 30.80 pilots per year. This attrition rate is 10.8 pilots above the annual production of Aircraft Commanders.

The last phase, from 16 December 1996 to 06 July 1997, shows what seems to be a return to normal conditions (8 pilots), with the attrition rate down to 13.80 pilots per year. This apparent reduction in attrition is misleading. The MPIS database is 6 months to one year behind. Therefore, the attrition rate measured in the last phase is below actual attrition. Furthermore, in the winter of 1997, 32 Aircraft Commanders have indicated their intention to leave as soon as they receive a firm job offer with an airline [3]. Those are not included in this analysis.

The results are summarized in the following table, broken down by Aircraft Commander (AC) and First Officer (FO).

Period	From	To	Attrition Rate	No. of Pilots	No. of AC	No. of FO
1	01 Jan 92	12 Sep 94	7.32/yr	21	20	1
2	12 Sep 94	16 Dec 96	30.80/yr	75	62	13
3	16 Dec 96	06 Jul 97	13.80/yr	8	7	1

Cumulative Releases from Ground Tour and Flying Tour; CC130 Pilots



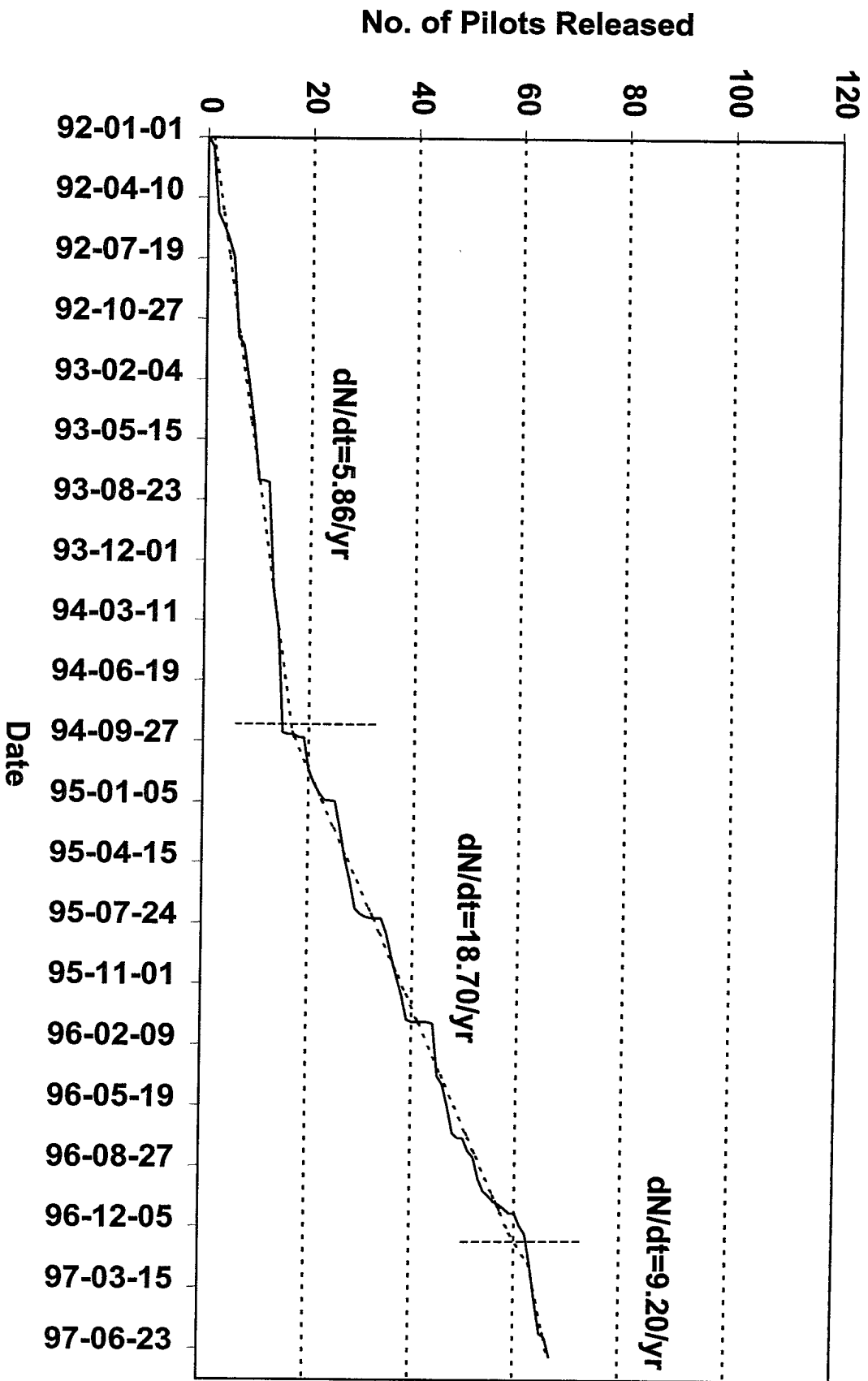
Slide 6

The attrition figures shown on the previous slide are broken down by pilots on a flying tour and pilots on a ground tour.

This slide shows the cumulative number of releases for pilots on a CC130 flying tour. Attrition rates are calculated for the same periods as the previous slide, and are indicated on the graph.

Period	From	To	Attrition Rate	No. of Pilots	No. of AC	No. of FO
1	01 Jan 92	12 Sep 94	5.86/yr	15	15	0
2	12 Sep 94	16 Dec 96	18.70/yr	47	40	7
3	16 Dec 96	06 Jul 97	9.20yr	5	5	0

Cumulative Releases from Flying Tour; CC130 Pilots



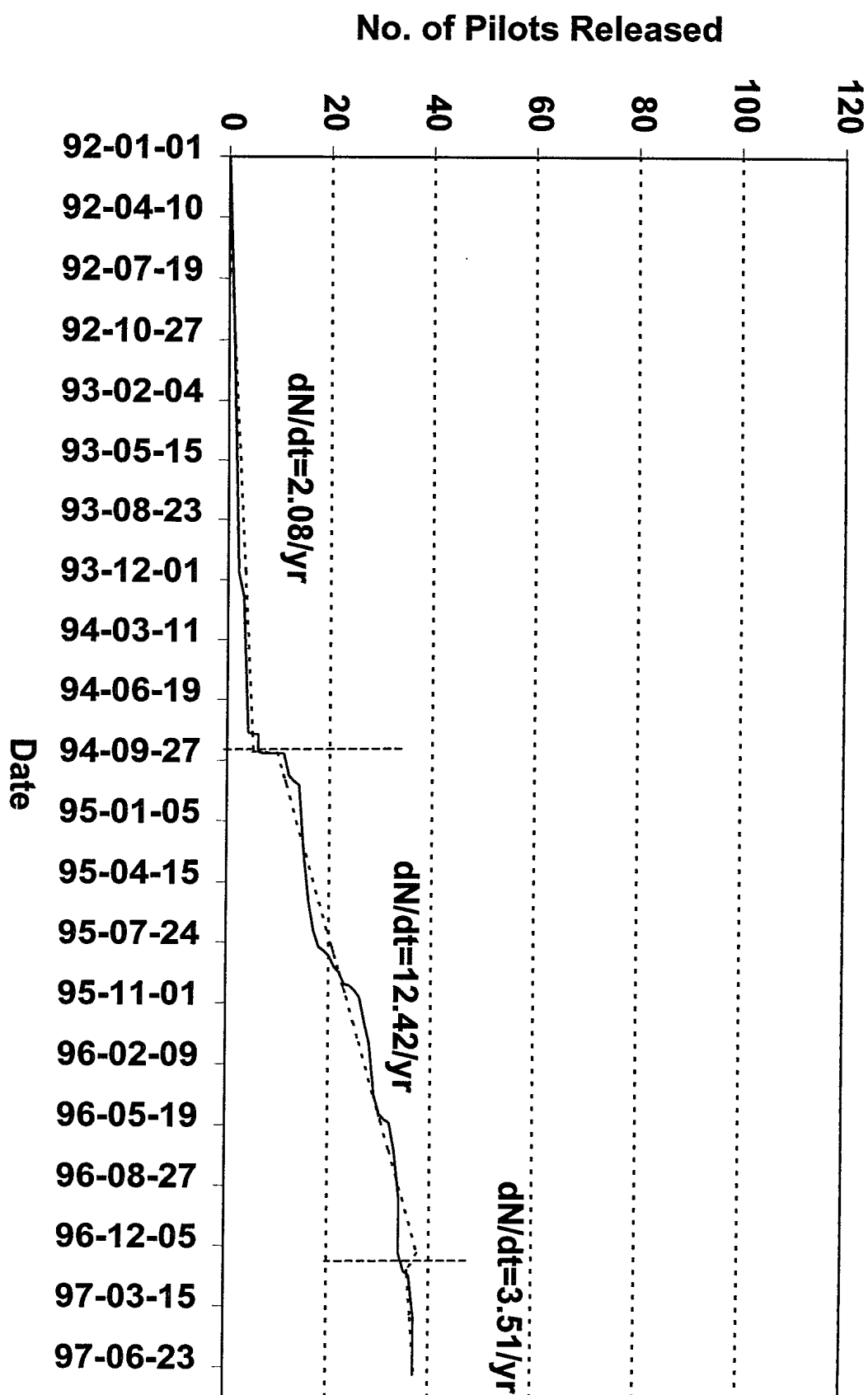
Slide 7

Attrition rates for CC130 pilots on a ground tour are shown on this slide.

Period	From	To	Attrition Rate	No. of Pilots	No. of AC	No. of FO
1	01 Jan 92	12 Sep 94	2.08/yr	6	5	1
2	12 Sep 94	16 Dec 96	12.42/yr	28	22	6
3	16 Dec 96	06 Jul 97	3.51/yr	3	2	1

Comparison of this slide with the previous one shows that most pilots leaving the CF are on a flying tour. This is detrimental to flying operations since the CF is losing current pilots.

Cumulative Releases from Ground Tour; CC130 Pilots

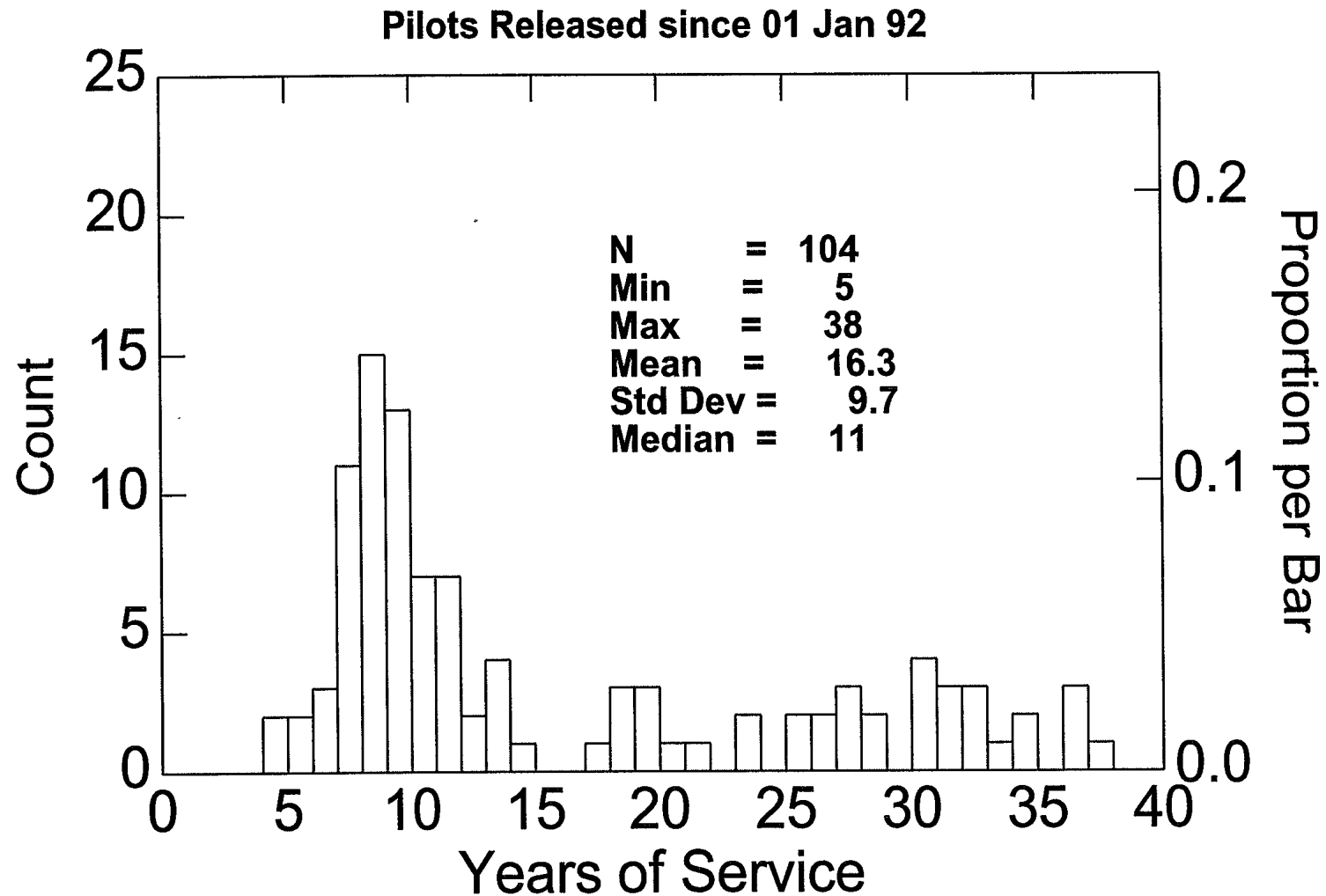


Slide 8

This slide shows the distribution of the Years of Service among released CC130 pilots. Contrary to popular belief, the bulk of pilots leaving the CF are not those at or near the 20 YOS mark. Rather, there is a bulk of pilots leaving around 9 YOS. The mean YOS at release is 16.3 years, and the median is 11 years.

The 9 YOS marks the end of the first service contract. This slide shows that most pilots who left in the last 5 years were at or near this landmark in their career.

CC130 Released Pilots Years of Service



Slide 9

This scatter plot of the Total Hours on the CC130 to the YOS shows an interesting relationship between YOS at release and flying hours on type. It shows that during the last 5 years, 53 pilots (51%) who left the CF had between 8 and 12 YOS, and that 48 of them had between 1000 and 4252 flying hours on the CC130 (hours on another aircraft type are not included).

Based on this analysis, it appears that it is not the pilots nearing the end of their military career who tend to leave the CF, but those who are at the mid-point in a 20 year career.

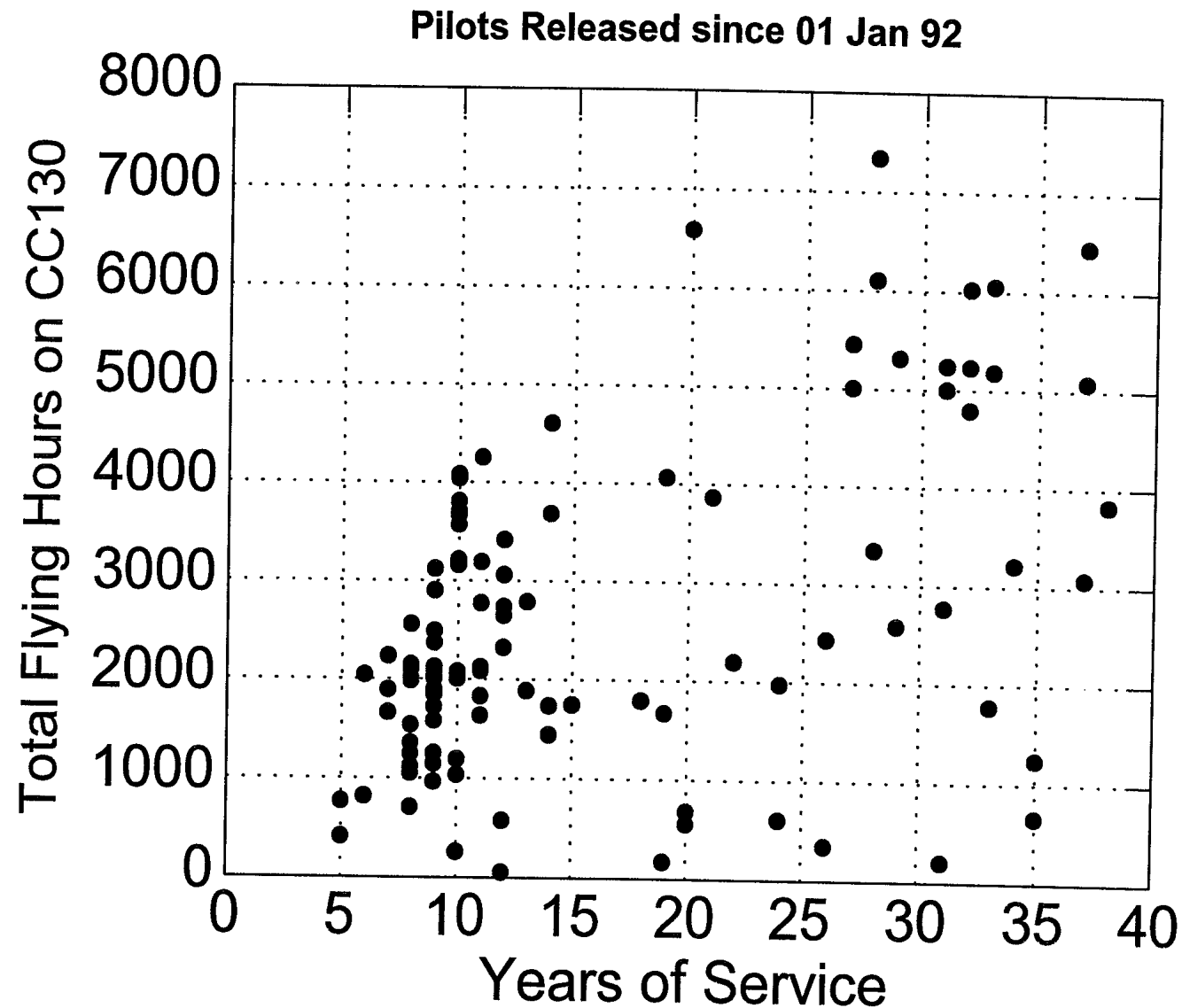
It is the opinion of the author that due to their flying experience and their age (late 20's to early 30's), these pilots are excellent candidates for airlines that require pilots. Airlines can hire pilots with a fairly high level of experience on a heavy aircraft who are still young enough so the training bill can be amortized over a period of 20 years of useful employment.

On the pilots' side, the prospects are also promising, since they can expect to enjoy maximum benefits by joining a commercial airline at a relatively early age.

Summary of released pilots population.

YOS at Release	No. of Pilots	% of Pilots	Flying Hours on CC130
0 to 7	7	6.7%	410 to 2232
8 to 12	53	51.0%	54 to 4252
13 and over	44	42.3%	171 to 7340

CC130 Pilots YOS at Release vs Experience Level



Slide 10

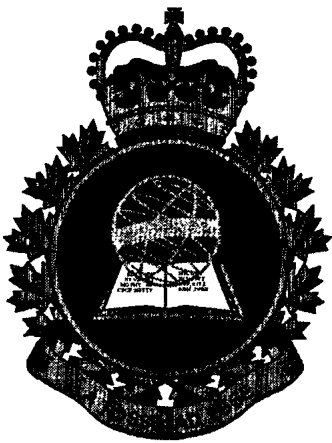
The second part of this analysis looked at the reasons why pilots leave ([4], [5]). To this end, responses to the Canadian Forces Attrition Information Questionnaire were analyzed. Personnel leaving the CF responded to the CFAIQ on a voluntary basis. The CFAIQ probes military personnel on the reasons why they leave, on their experience with the CF, and on how they compare Civilian Life with the Military.

The data for this part of the briefing comes from a different database than the attrition analysis. The service number and the name of the responding member is not collected with the CFAIQ. For that reason, it was not possible to cross-reference responses to the CFAIQ with attrition data.

A total of 13,873 military personnel responded to the CFAIQ. This personnel was released from 24 January 1987 to the present year.

From the 13,873 respondents, 24 were positively identified as ATG pilots. It was not possible to tell which of these pilots are qualified on the CC130, because the CFAIQ does not include flying hours information. Other groups were identified as follows: Non ATG Pilots (236), Navigators (1,135), Flight Engineers (36), Air Force (non aircrew) (4,813), Army (4,266) and Navy (2,718). 645 respondents had too much missing data and could not be attached to one of these groups.

The group to which the respondents belong were identified using a combination of the MOC, the Unit Identification Code, and the Element of the respondent.



Reasons for Leaving

- **Analysis of CFAIQ Responses**
 - **Volunteer basis**
 - **13,873 respondents**
- **24 ATG Pilots**
- **Compared with**
 - **other Pilots, NAV, FE, other Air Force, Army and Navy Respondents**

Slide 11

Among the most significant results from the analysis of CFAIQ responses, the top 5 reasons given by ATG Pilots for leaving were:

Increase family stability by establishing roots in one community

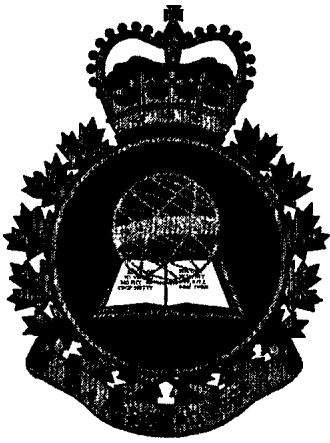
Enjoy their pension and a potential civilian salary

The desire for more challenging work

They can't get the posting they want

They spend too much time away from home

ATG Pilots have also indicated that they are highly satisfied with the training they received and rate their overall experience with the CF as positive.



Top Five Reasons

- **Increase Family Stability**
- **Pension + Civilian Salary**
- **Want More Challenging Work**
- **Can't get desired Posting**
- **Too much time away from home**

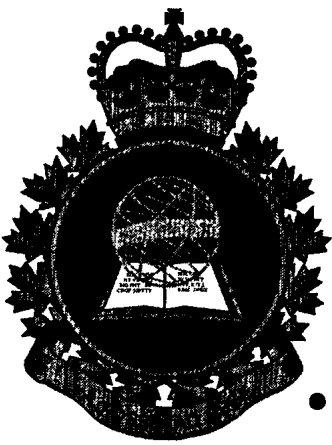
Slide 12

In summary, this quick analysis showed that attrition is high among CC130 pilots, and it is expected to get higher.

This analysis also showed that most pilots who leave the CF have between 8 and 12 YOS, and between 1000 and 4000 flying hours on the CC130. Assuming these pilots joined the CF when they were about 20 years old, they are in their late 20's or early 30's when they leave the CF. The combination of experience and young age makes them prime candidates for airlines that require pilots.

It is the opinion of the author that pilots within that range of YOS and flying experience should be the target of a pilot retention program. Furthermore, issues of family stability and salary should also be considered in any pilot retention program.

The results of this study were annexed to a proposal for a pilot retention program issued by ATGHQ Staff, which was sent to the Defence Management Committee.



Conclusions

- **Attrition is high, expected to get higher**
- **Most pilots who leave:**
 - **8-12 YOS, 1000-4000 Flying Hours**
 - **Late 20's, early 30's**
- **Good Candidates for Commercial Airlines**
- **Target for Pilot Retention Program**
- **Results passed on to Defense Management Committee**
- **Short Time (2 weeks), High Impact (DMC)**

References

- [1] ATGHQ 3550-3-6 (Ops Rsch Adv), 5 June 1997.
- [2] Fournier, P., Analysis of Attrition Levels among CC130 Pilots since 1992, ATGOR Research Note 9706, June 1997.
- [3] ATGHQ 5725-1 (DComd), 4 March 1997.
- [4] ATGHQ 3550-3-6 (Ops Rsch Adv), 17 March 1997.
- [5] Fournier, P., Analysis of Responses to the Canadian Forces Attrition Information Questionnaire (CFAIQ), ATGOR Research Note 9705, June 1997.

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